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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/980,713 | 12/05/2001 | Toshiki Tanaka | Q67268 | 7137 |

7590 01-15-2003
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| EXAMINER |
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MCCLOUD, RENATA D

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| ART UNIT | PAPER NUMBER |
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2837

DATE MAILED: 01-15-2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|----------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/980,713 | TANAKA, TOSHIKI |
| | Examiner Renata McCloud | Art Unit 2837 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 05 December 2001.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 9 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-8 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The following is requested:

(a) Referring to figures 1, 4, 6, 8, 10, 12, and 14-17, label each box the reference numbers are pointing to with a/an description/abbreviation of what the box represents.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "etc." renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

The phrase "at least" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless -

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Maruo et al (U.S. Patent 6,091,219).

Maruo et al teach:

Claim 1: A numerical control drive system having two or more drive units consisting of a servo drive unit for driving a motor, a spindle drive unit, (e.g. Fig. 2) a numerical control unit for outputting a control command for driving the motor to said two or more drive units (e.g. Fig. 3, #32), and a motor drive power converter for converting AC power supplied from an AC power supply into DC power and supplying the DC power to said two or more drive units (e.g. Fig. 2, #56), characterized in that said motor drive power converter comprises means for finding an input current of the AC power supplied from the AC power supply, means for comparing the input current found by the input current detection means with an allowable current value (e.g. Column 5:60-67), and means for inputting at least either motor drive currents or motor speeds from said two or more drive units to which the DC power is supplied (e.g. Fig 2, #56; Column 3:50-4:3), selecting the drive unit providing a large effect of lowering the input current (e.g. Column4:53-62), and outputting a control signal thereto if the input current determination means determines that the input current is greater than the allowable current value, that said drive unit comprises control signal execution means for changing the control command from said numerical control unit based on the control signal output from the control signal output means

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(e.g. Column 5:60-6:3-19), and that the control signal execution means of the drive unit inputting the control signal changes the control command from said numerical control unit, thereby lowering the input current (e.g. Column 4:53-62).

Claim 8: the motor drive power converter comprises input current output means for outputting the input current found by the input current detection means to said numerical control unit (e.g. Fig 3, #46).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo et al as applied to claim 1 above, in view of Philipp (U.S. Patent 6,025,683).

Maruo et al teach the limitations of claim 1, however they do not teach the limitations of claims 2-5. Philipp teaches:

Claim 2: if the input current determination means determines that the input current is greater than the allowable current value, the control signal execution means performs processing of lessening the inclination of a speed command (e.g. Column 14:9-14 and Column 15:12-30).

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Claim 3: if the input current determination means determines that the input current is greater than the allowable current value, the control signal execution means shuts off gates of switching elements of said drive units (e.g. Column 14:9-14 and Column 15:12-30).

Claim 4: if the input current determination means determines that the input current is greater than the allowable current value, the control signal execution means clamps a speed command (e.g. Column 14:9-14 and Column 15:12-30).

Claim 5: if the input current determination means determines that the input current is greater than the allowable current value, the control signal execution means clamps a motor drive current (e.g. Column 14:9-14 and Column 15:12-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the numerical control system taught by Maruo et al to include means to shut off switching elements, means to decelerate speed, and means to clamp the speed, when the input current exceeds a limit. The advantage of this would be improved energy regulation and protection of the numerical control system from short-circuiting.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo et al as applied to claim 1 above, and further in view of Sawashima et al (U.S. Patent 6,008,609).

Maruo et al teach the limitations of claim one as well as the motor drive power converter comprising phase detection means for detecting a power supply phase of the AC power (e.g. Fig. 2, #41;Column 3:50-55). However they do not teach and the input current determination means inputs the power supply phase detected by the phase detection means and compares the input current with the allowable current value with respect to the less-than, equal-to, or greater-than

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relation in the proximity of the power supply phase where the input current changes in direction.

Sawashima et al teach this (e.g. Column 9:30-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the numerical control device taught by Maruo et al to include means to input the power supply phase and compare the input current with an allowable current as taught by Sawashima et al. The advantage of this would be greater control of acceleration and deceleration of the motors.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo et al as applied to claim 1 above, in view of Sawashima et al (U.S. Patent 6,008,609), further in view of Takaki et al (U.S. Patent 6,081,090).

Maruo et al teach the limitations of claim 1. However they do not teach the motor drive power converter comprising means for retaining the cumulative sum of times the input current determination means has determined that the input current exceeds the allowable current value {Sawashima et al teach this (e.g. Fig. 19)}, and alarm determination means for outputting an alarm to said drive units and said numerical control unit if the cumulative sum of times retained in the cumulative- sum-of -times retention means becomes equal to or greater than a reference value {Takaki et al teach this (e.g. Fig. 1, #13, #19, #20)}.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the numerical control device taught by Maruo et al to include means for determining if the input current exceeds a value and means for outputting an alarm to said drive units and said numerical control unit if the sum of times retained in the cumulative-

sum-of-times retention means becomes equal to or greater than a reference value as taught by Sawashima et al and Takaki et al. The advantage of this would be protection of the control apparatus from short-circuiting and overheating.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (703) 308-1763. The examiner can normally be reached on Mon.-Thurs and every other Fri. from 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on (703) 308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Renata McCloud
Examiner
Art Unit 2837

RDM
January 7, 2003

